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ABSTRACT

The purpose of this study was to identify graduate students' predominant study skill strengths and weaknesses. Also examined was the relationship between specific study skills and library anxiety. Participants were 133 graduate students from a number of education disciplines at a university in the southeastern United States. These individuals were administered the Study Habits Inventory (SHI) (Jones & Slate, 1992) and the Library Anxiety Scale (Bostick, 1992). Findings revealed that students' responses to 62.9% of the 63 study skill statements presented in the SHI were appropriate. Study skill weaknesses were identified in the areas of note-taking and reading skills. An all possible subsets multiple regression analysis led to the identification of eight specific study behaviors that predicted levels of library anxiety. These study habits explained 45.8% of the variance in library anxiety, which, using Cohen's (1988) criteria, represents a large effect size. Implications for library anxiety reduction as a study skills intervention are discussed. Three tables present findings on characteristic strengths in students' study skills, characteristic weaknesses in students' study skills, and study habits that contributed significantly to the prediction of library anxiety. (Contains 43 references.) (Author/AEF)

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Running head: LIBRARY ANXIETY AND STUDY SKILLS

Library Anxiety: The Role of Study Habits

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Abstract

The purpose of this study was to identify graduate students' predominant study skill strengths and weaknesses. Also examined was the relationship between specific study skills and library anxiety. Participants were 133 graduate students from a number of education disciplines at a university in the southeast. These individuals were administered the Study Habits Inventory (SHI; Jones & Slate, 1992) and the Library Anxiety Scale (Bostick, 1992). Findings revealed that students' responses to 62.9% of the 63 study skill statements presented in the SHI were appropriate. Study skill weaknesses were identified in the areas of note-taking and reading skills. An all possible subsets multiple regression analysis led to the identification of eight specific study behaviors that predicted levels of library anxiety. These study habits explained 45.8% of the variance in library anxiety, which, using Cohen's (1988) criteria, represents a large effect size. Implications for library anxiety reduction as a study skills intervention are discussed.

Library Anxiety: The Role of Study Habits

The last decade has seen a myriad of studies in the area of study skills and habits in educational settings. Jones, Slate, and their colleagues have been particular prolific during this time period, publishing more than 20 studies in area of study habits. These researchers consistently have documented a positive relationship between study habits and academic success at the high school level (Jones, Slate, Bell, & Saddler, 1991; Jones, Slate, Blake, & Holifield, 1992; Slate, Jones, & Dawson, 1993; Stanley, Slate, & Jones, 1999). Unfortunately, poor study skills have been noted among secondary school students (Jones et al., 1991; Jones et al., 1992; Slate et al., 1993), with only between 40% and 46% of appropriate study behaviors being performed by high school students.

An association between study skills and academic performance also has been found to prevail among undergraduate students (Agnew, Slate, Jones, & Agnew, 1993; Elliot, Godshall, Shrout, & Witty, 1990; Jones, Green, Mahan, & Slate, 1993; Jones, Slate, & Kyle, 1992; Jones et al. 1994; Jones, Slate, & Marini, 1995; Jones, Slate, Marini, & DeWater, 1993; Kleijn, van der Ploeg & Topman, 1994; Lawler-Prince, Slate, & Jones, 1993; Slate, Jones, & Charlesworth, 1990). Moreover, Jones, Slate, Perez, and Marini (1996), based on a series of studies conducted by Jones and Slate (1992), reported that study skills account for approximately 15% of the variance in undergraduate students' grades. As is the case for public school students, inadequate academic skills have been noted among undergraduate students, with only between 50% (Agnew et al., 1993) and 58% (Jones et al., 1992) of suitable behaviors being utilized, on average. Most recently, Lammers, Onwuegbuzie, and Slate (in press) found that undergraduate students at a mid-

southern university performed only 53.0% of appropriate study behaviors, with study skill weaknesses being identified in the areas of note-taking, reading skills, and time management. Thus, it is clear that good study skills and habits are central to academic success among students at both secondary and tertiary levels.

Although previous research has investigated the association between students' study skills and cognitive performance, the extent to which study skills is related to affective variables has bot been examined. One such variable is state-based levels of anxiety. The library is one common setting in which anxiety prevails. Indeed, the prevalence of library anxiety has been documented in the literature, with the vast majority of college students experiencing some form of anxiety while utilizing the library (Mellon, 1986). As noted by Mellon (1986), feelings of library anxiety results from either students' perceived size of the library, their lack of knowledge about the location of materials, equipment, and resources of the library, or their inability to initiate library research and to undertake a library search.

To date, several correlates of library anxiety have been identified. Specifically, Qun and Onwuegbuzie have found library anxiety to be related to trait anxiety (Jiao & Onwuegbuzie, 1999a), learning styles (Onwuegbuzie & Jiao, 1998), perfectionism (Jiao & Onwuegbuzie, 1998), hope (Onwuegbuzie & Jiao, 1999), self-perception (Jiao & Onwuegbuzie, 1999b), and academic procrastination (Onwuegbuzie & Jiao, in press). Also, Jiao, Onwuegbuzie, and Lichtenstein (1996) reported that students with the highest library anxiety levels tend to be young, male, those who do not speak English as their mother tongue, who have high levels of academic achievement, who are employed on either part-time or full-time basis, and who visit the library infrequently. Additionally, when

library-anxious students visit the library, they tend to do so either to use the online computer indices, to return a book, to conduct a library search for thesis or dissertation topics, to obtain a book or article for an assignment, or to study for a class project. Finally, freshmen appear to report higher levels of library anxiety than so sophomores, juniors, and seniors.

Interestingly, the vast majority of college students use academic libraries regularly, with between 80% (Onwuegbuzie & Jiao, 1997) and 83% (Gratch, 1980) frequenting libraries at least once a week. Moreover, because the majority of these learners utilize the library to study for a test, to study for a class project, to undertake course-related readings, to obtain a book or article for a course paper, and to use computerized indexes and online facilities (Onwuegbuzie & Jiao, 1997), it is clear that libraries form an important component of students' study habits. Indeed, it is likely that students with inadequate study skills are more likely to be anxious about using libraries. That is, a student's study skills likely are related to her/his level of library anxiety. However, this hypothesis has not yet been examined empirically. Thus, the purpose of this study was to identify graduate students' predominant study skill strengths and weaknesses. Also examined was the relationship between specific study skills and library anxiety. It was hoped that findings from this study would lead to the identification of study habits that place students at risk for high levels of library anxiety.

Method

Participants

Participants were 133 graduate students enrolled in several sections of a graduate-

level research methodology course students at a mid-sized university in the southeast. Participation in the study was voluntary and anonymous, with no student declining. In order to participate, students were required to give their consent by signing informed consent documents. The ages of the participants ranged from 21 to 51 (M = 25.9, SD = 6.8). Mean academic achievement, as measured by grade point average, was 3.57 (SD = 0.36). The majority of sample members was female (92.5%).

Instruments and Procedure

Participants were administered the Library Anxiety Scale (LAS) and the Study Habits Inventory (SHI; Jones & Slate, 1992). The LAS, developed by Bostick (1992), is a 43-item, 5-point Likert-format instrument which assesses levels of library anxiety. Scores on the LAS range from 43 to 215, with high scores representing high levels of overall anxiety. Cronbach's alpha reliability of .80 and a three-week test-retest reliability of .74 were reported by Bostick (1992). Additionally, Jiao et al. (1996) reported that the LAS subscales generated scores that yielded a coefficient alpha reliability of .92. For the present investigation, the scores on the LAS generated a coefficient alpha reliability of .95.

The SHI consists of 63 true-false items designed to assess typical study behaviors of college students. Thirty items describe appropriate study habits, and 33 items pertain to ineffective study habits. Items representing poor study habits were key-reversed such that total scale scores ranged from 0 to 63, with high scores indicating good study skills. This instrument has been found to generate reliable scores. For example, Jones and Slate (1992) reported SHI scores which had a classical theory mean alpha reliability coefficient of .85, and a 2-week test-retest coefficient of .82. The validity of the SHI has been

demonstrated through significant correlations with college students' grades at both the undergraduate (Jones & Slate, 1992) and graduate (Onwuegbuzie et al., in press) levels. For the present study, scores pertaining to the SHI had a classical theory alpha reliability coefficient of .85.

Results

The mean SHI score for students in this inquiry was 39.6 (*SD* = 9.3; range = 18-57), indicating that they regularly performed only 62.9% (*SD* = 14.8%; range = 28.6%-90.5%) of appropriate behaviors that were assessed by the SHI. This mean is larger than the means found in previous research of college undergraduate students of 32.0 (Agnew et al., 1993), 32.1 (Jones et al., 1995), 33.0 (Jones, 1989), 34.2 (Jones, Slate, Marini, et al., 1993; Jones et al., 1994), and 36.4 (Jones, Slate, & Kyle, 1992; Lammers, Onwuegbuzie, & Slate, 1999). Indeed, a series of independent *t*-tests, using the Bonferroni adjustment for Type 1 error, revealed that the study skills exhibited by the graduate students were statistically significantly higher than that exhibited by the undergraduates in all five studies mentioned above. The effect sizes pertaining to these differences ranged from .38 to .88, indicating moderate to very large differences (Cohen, 1988).

As recommended by Jones, Slate, Blake, et al. (1992), study skill strengths were defined as those SHI items on which at least 75% of the students responded in an appropriate manner (i.e., responding "true" to items that described appropriate behaviors and "false" to items that characterized inappropriate behaviors). Conversely, study skill weaknesses were defined as those SHI items on which at most 25% of the students responded in an appropriate manner. This method resulted in the classification of 20

characteristic strengths within the sample (see Table 1) and 6 characteristic weaknesses (see Table 2).

Insert Table 1 about here

Insert Table 2 about here

Study Skills Strengths. A content analysis of the identified strengths indicated that these strengths fell into the following five categories: note-taking, reading, motivation, time management, and study techniques (Table 1). With respect to taking notes, students tended to report that they used notebooks rather than loose paper to take notes. These students also were unlikely to use a tape recorder as a replacement for, rather than as an adjunct to, taking notes. Additionally, they tended to take notes as they read material, rather than waiting until they had completed their reading assignments to take notes. These students took notes on any material that they deemed to be important, even if they were confident that they would remember it. Finally, when taking notes in class, these students were more apt to use abbreviations and phrases.

With regard to reading, students were more apt to complete assignments before their instructor discusses them in class. Also, students tended to think critically about new material rather than accept everything that they read. Similarly, students tended not to find it difficult to identify the most salient aspects of the material read.

With respect to motivation, students tended to attend class regularly. Time management was represented by the fact that students were unlikely (1) to have papers completed on time and (2) to spend a disproportionate amount of time on some subjects. Finally, with regard to study techniques, students typically had the necessary materials to study, and when they planned to study with their peers, they tended to study by themselves ahead of time. When studying, students with appropriate study techniques tended to avoid consumption of alcoholic beverages. They also tried not to rely on rote memorization, preferring to relate course materials to everyday life and to material in other courses. These students also were more apt to break down the study material into meaningful components that could be studied separately. Additionally, while studying, students refrained from getting off task by writing notes to friends, watching other people, and the like. At the same time, students tended to schedule study periods that were long enough for them to be productive.

Study Skills Weaknesses. A content analysis of weaknesses revealed the following two general themes: 1) note-taking and 2) reading skills. With respect to the former, students tended not to use designated notebooks to record new words and their meanings, nor did they recopy their lecture notes or refrain from keeping notes for all their classes in the same textbook. Pertaining to reading skills, students reported that they did not preview chapters of a book before reading them by creating outlines. Nor did students make lists of key terms to help them focus while reading. Consistent with their passive reading styles was the fact that the majority of students reported that they often "read" several pages without knowing what was on them.

Insert Table 2 about here

Relationship Between Study Skills and Library Anxiety.

Pearson's Product-Moment correlation coefficient revealed a statistically significant relationship between scores from the full SHI scale and library anxiety, $r = -.27$, $p < .01$. Specifically, students with the highest SHI scores (i.e., who exhibited more of the appropriate study habits) also tended to have the lowest levels of library anxiety. Using Cohen's (1988) criteria, the corresponding effect size was moderate.

Because total SHI score was related to library anxiety, an *all possible subsets* (APS) multiple regression analysis was undertaken (Onwuegbuzie & Daniel, 2000; Thompson, 1995) using the total score on the LAS as the dependent variable, and the SHI items as the predictor variables. This regression technique was utilized in order to select an optimal set of variables in terms of maximum proportion of variance explained by the predictor set. All possible models involving some or all of the selected variables were examined (Onwuegbuzie & Daniel, 2000). This method of analysis has been recommended by many statisticians (e.g., Thompson, 1995). Indeed, APS multiple regression has been found to be superior to *stepwise* multiple regression in finding the optimal model (Huberty, 1989; Thompson, 1995; Thompson, Smith, Miller, & Thomson, 1991). In APS regression, separate regressions are computed for all independent variables singly, all possible pairs of independent variables, all possible trios of independent variables, and so forth, until the best subset of independent variables is identified according to some criterion. For the

present study, the criterion used for selection of the multiple regression model was the maximum proportion of variance explained (R^2), which provides a measure of effect size (Cohen, 1988).

The selected multiple regression model contained eight SHI items which significantly predicted library anxiety [$F(8, 132) = 13.07$, $p < .0001$]. These variables combined to explain 45.8% of the total variance (adjusted $R^2 = 42.3\%$). The eight SHI items that contributed to the regression equation are presented in Table 3. It can be seen from this table that students with the highest levels of library anxiety were more likely than those with the lowest levels of anxiety (1) not to seek help from their instructor when they had difficulty with their work; (2) not to tape record lectures instead of taking notes; (3) to rely on rote memorization; (4) not to complete assigned readings before their instructor discussed them in class; (5) to consume plenty of coffee and other caffeine-based drinks in order to stay awake; (6) not to utilize advance organizers before reading a chapter of a textbook; (7) not to recopy their lecture notes as soon as possible after class; and (8) not to break large amounts of information onto small clusters that can be studied separately. These behaviors have been classified in Table 3 as pertaining either to note-taking, study techniques, or reading.

Insert Table 3 about here

Discussion

The purpose of this study was to examine graduate students' study habits, as well

as to investigate empirically the relationship between study habits and library anxiety. Findings revealed that the students responded appropriately to 62.9% of the statements measuring study skills. Although this proportion was found to be significantly higher than for undergraduate students in previous studies, these findings suggest room for improvement. Indeed, bearing in mind that study skills has been found repeatedly to be related to academic performance (Agnew, Slate, Jones, & Agnew, 1993; Elliot, Godshall, Shrout, & Witty, 1990; Jones, Green, Mahan, & Slate, 1993; Jones, Slate, & Kyle, 1992; Jones et al. 1994; Jones, Slate, Bell, & Saddler, 1991; Jones, Slate, Blake, & Holifield, 1992; Jones, Slate, & Marini, 1995; Jones, Slate, Marini, & DeWater, 1993; Kleijn, van der Ploeg & Topman, 1994; Lawler-Prince, Slate, & Jones, 1993; Slate, Jones, & Charlesworth, 1990; Slate, Jones, & Dawson, 1993; Stanley, Slate, & Jones, 1999), it is possible that the 37.1% of inappropriate behaviors play a role in explaining why approximately half of doctoral candidates never complete their degrees (Bowen & Rudenstine, 1992; Cesari, 1990). In any case, it cannot be assumed that graduate students possess appropriate study skills, even though they represent the most successful academic achievers. As such, graduate students might benefit from study skills training. Interestingly, study skill weaknesses were identified in the areas of note-taking and reading skills--providing a focus for these study skills training interventions.

Multiple regression analyses revealed behaviors pertaining to note-taking, study techniques, and reading that predicted levels of library anxiety. Because many students utilize the library to study (Onwuegbuzie & Jiao, 1997), it is possible that, once in the library, students with the highest levels of anxiety tend to select inappropriate behaviors.

For example, in an effort to minimize time spent in the library due to feelings of apprehension, high-anxious students might initiate short cuts while studying, including attempting to memorize the exact words in a textbook and not making outlines of book chapters prior to reading them. Additionally, it is possible that library anxiety leads to avoidance behaviors such as not utilizing the library to complete assigned readings before the instructor discusses them in class and not recopying lecture notes as soon as possible after class.

Moreover, the relationship between study skills and library anxiety can perhaps be explained via Wine's (1980) Cognitive-Attentional-Interference theory. Wine's theory suggests that anxiety interferes with students' study skills by directing attention away from appropriate study behaviors (Benjamin, McKeachie, Lin, & Holinger, 1981; Culler & Holahan, 1980; Onwuegbuzie & Daley, 1996; Wittmaier, 1972), which in turn debilitates performance in research methodology courses. For these students, such cognitive interference may take the form of avoidance (e.g., not recopying lecture notes, not making outlines before or during reading textbooks), attention to information and material that is irrelevant to the examination (e.g., trying to memorize the exact words in the text), and diminished information processing capacity due to preoccupation with negative self-defeating thoughts (e.g., not breaking large amounts of information into small clusters that can be studied separately) (Rothblum, Solomon, & Murakami, 1986; Tobias, 1985).

Unfortunately, the correlational nature of the present study prevents us from determining the causal nature of the association between study habits and anxiety, that is whether (1) poor study skills increase a student's level of library anxiety--especially for

those aspects that are normally undertaken by the learner in the library; (2) library anxiety induces more inappropriate study habits; and (3) a bi-directional relationship exists between study skills and library anxiety in which poor study habits increase levels of library anxiety, which, in turn, lead to more inappropriate study behaviors, which, in turn, increase library anxiety levels, and so forth, until both the frequency and intensity of inappropriate study habits and levels of library anxiety are maximized. Thus, future research should investigate further this link.

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Table 1: Characteristic Strengths in Students' Study Skills

Study Habits Item	Percent Responding Appropriately
Note-Taking	
If I am sure I will remember something, I do not write it in my notes even if it seems to be important.	84.5
When taking notes in class, I abbreviate words and jot down phrases rather than complete sentences.	84.5
I take notes on odd, loose slips of paper instead of in a notebook.	94.8
I tape record lectures instead of taking notes.	98.3
I take notes after I have completed a reading assignment rather than taking notes as I go along.	78.4
Reading	
I try to complete assigned readings before my instructor discusses them in class.	81.0
I try to think critically about new material and not simply accept everything I read.	78.4
I have trouble in picking out the important points in the material I read.	75.0
Motivation	
I sometimes skip classes, especially when attendance is not required.	87.1
Time Management	
I often do not have reports ready on time, or they are done poorly if I am forced to have them in on time.	97.4
I spend too much time on some subjects and not enough time on others.	75.0

Table 1 (Cont/d...): Characteristic Strengths in Students' Study Skills

Study Habits Item	Percent Responding Appropriately
Study Techniques	
My study periods are too short for me to get "warmed up" and really concentrate on studying.	80.2
I frequently get up, write notes to friends, or look at other people when I should be studying.	83.6
I often sit down to study only to find that I do not have the necessary books, notes, or other materials.	88.8
I often try to make school more enjoyable by having a beer while I study.	91.4
In studying a textbook, I try to memorize the exact words in the text.	80.2
I try to break large amounts of information into small clusters that can be studied separately.	90.5
I use the facts I learned in one course to help me understand the material in another course.	88.8
I use the facts learned in school to help me understand events outside of school.	91.4
If I plan to study with friends, I do not study by myself ahead of time.	89.7

Table 2: Characteristic Weakness in Students' Study Skills

Study Habits Item	Percent Responding Appropriately
Note-Taking	
As soon as possible after class, I recopy my lecture notes.	24.0
I keep notes for all my classes in the same notebook.	24.0
I keep a special indexed notebook or card system or recording new words and their meanings.	6.0
Reading Skills	
I use the headings to make an outline of a chapter before I begin to read it.	23.3
Before reading a chapter, I jot down a few questions and a list of key terms to focus my attention while reading.	8.6
Sometimes I discover that I have "read" several pages without knowing what was on them.	21.6

Table 3: Study Habits that Contributed Significantly to the Prediction of Library Anxiety

Study Habits Item	Beta	% of Variance Explained
Note-Taking		
As soon as possible after class, I recopy my lecture notes.	.20	4.2
Study Techniques		
When I have difficulty with my work, I do not hesitate to seek help from my instructor.	-.26	9.9
I tape record lectures instead of taking notes.	-.33	7.3
To help stay awake while studying, I frequently drink a lot of coffee or other beverages that are high in caffeine.	-.33	5.7
I try to break large amounts of information into small clusters that can be studied separately.	.15	2.0
In studying a textbook, I try to memorize the exact words in the text.	-.23	5.1
Reading		
I try to complete assigned readings before my instructor discusses them in class.	-.30	5.3
Before reading a chapter, I jot down a few questions and a list of key terms to focus my attention while reading.	-.29	6.3

Note: Positive βs indicate that students with the highest levels of library anxiety tended to report more appropriate behaviors; negative βs indicate that students with the highest levels of library anxiety tended to report more negative behaviors.